



MTD115b

COAXIAL
TECHNOLOGY

APPLICATIONS

The L-ACOUSTICS® MTD115b loudspeaker enclosure and its accompanying analog controllers provide a highly versatile system that is designed for distributed sound reinforcement. Intended for medium-scale touring, sub-hire or fixed installation, the MTD115b features proven components that are compatible with previous generation MTD enclosures while also benefiting from the economy, packaging and "plug and play" ease of use afforded by its companion LLC line level analog controllers (LLC115b-st for passive operation, LLC115b-2w for active two-way operation).

The MTD115b is a switchable active/passive loudspeaker enclosure containing a 1.4" exit compression driver that is directly loaded by the 15" loudspeaker in a coaxial configuration. Advantages of the coaxial approach include: single point source radiation and excellent phase response, total waveform coherency at all frequencies and axi-symmetrical directivity that produces identical horizontal and vertical coverage. Coaxial design also provides LF/HF superimposed dispersion characteristics that are free of polar lobing effects typical of traditional horn and woofer combinations. The end result is natural, studio monitor level sound quality, ideal for proximity use and perfectly matching semi-reverberant environments.

The MTD115b is designed for distributed sound reinforcement and can also be used in medium power front-of-house (FOH) applications for theatres, clubs, multi-purpose venues or corporate events. Examples of distributed systems include delay rings for large-scale installations, surround effects channels for theatre or multimedia, distributed reinforcement for sports venues and delays for speech reinforcement in convention centre ballrooms. Due to its compact, wedge-shaped format, axi-symmetrical directivity and switchable active/passive design, the MTD115b also provides a cost-effective floor monitor solution for live sound reinforcement. When used with additional subwoofers such as the SB115, SB118 or SB218, the MTD115b can be used in side fill or drum monitoring applications.

The L-ACOUSTICS LLC115b-st and LLC115b-2w are dedicated analog controllers that provide optimum processing and sense return protection for passive or active operation of the MTD115b, respectively. Front panel design of the LLC115b-st and LLC115b-2w allows each unit to function as a patch panel, providing an ergonomic, cost-effective solution for amplifier rack packaging.

A pole mount socket and single stud anchor plate are included as standard on the MTD115b and the enclosure is Omnimount-ready. An adjustable U-bracket is available as an optional rigging accessory for ceiling, wall or scaffold mounting.

L-ACOUSTICS PROFESSIONAL SOUND SYSTEM



- ▶ **Switchable active/passive two-way enclosure (15" LF, 1.4" HF)**
- ▶ **High power coaxial driver assembly**
- ▶ **Point source radiation (85° conical directivity)**
- ▶ **Flexible format for distributed sound reinforcement**
- ▶ **Wedge-shaped for floor monitor use**
- ▶ **Suitable for medium-power FOH applications**
- ▶ **Designed for fixed installation and touring**
- ▶ **Compact, rugged construction, flexible rigging**
- ▶ **Analog processor control with sense return protection**

SPECIFICATIONS

L-ACOUSTICS specifications are based on measurement procedures which produce unbiased results and allow for realistic performance prediction and simulation. Some of these specifications will appear very conservative when compared with other manufacturer's specifications. All measurements are conducted under free field conditions and scaled to a 1 m reference distance unless otherwise indicated.

Frequency Response

Frequency response 65 - 14k Hz (± 3 dB) (LLC FRONT position)
Usable bandwidth 50 - 16k Hz (-10dB)

Sensitivity¹

| PASSIVE | | (2.83 Vrms @ 1m) | 98.5 dB SPL | 65 - 14k Hz |
|---------------------|--|------------------|--------------|--------------|
| ACTIVE | | (2.83 Vrms @ 1m) | 96 dB SPL | 65 - 1.2k Hz |
| LF (2.83 Vrms @ 1m) | | 106 dB SPL | 1.2 - 14 kHz | |

Power Rating²

| (Long Term) | | | Amplification* | | Impedance |
|-------------|---------|----------|----------------|-------|-----------|
| PASSIVE | 46 Vrms | 265 Wrms | 1060 Wpeak | 530 W | (Nominal) |
| ACTIVE | 46 Vrms | 265 Wrms | 1060 Wpeak | 530 W | 8 ohms |
| LF | 46 Vrms | 265 Wrms | 1060 Wpeak | 600 W | 8 ohms |
| HF | 35 Vrms | 150 Wrms | 600 Wpeak | 600 W | 8 ohms |

*Amplifiers must have 32 dB gain in order for LLC115b-st or LLC115b-2w sense return protection to function properly

Nominal Directivity (-6dB)³

Axi-symmetrical 85° (± 20 °)

System Output⁴

| One enclosure | 122 dB (cont) | 128 dB (peak) | PASSIVE/ACTIVE - FRONT mode |
|---------------|---------------|---------------|------------------------------|
| | 125 dB (cont) | 131 dB (peak) | PASSIVE/ACTIVE - X-OVER mode |

FRONT LLC setting provides a 3 dB low frequency contour under freefield conditions
X-OVER LLC setting applies a 100 Hz high pass filter

Components

LF 1 x 15" weather resistant loudspeaker (4" voice coil)

HF 1 x 1.4" exit compression driver (titanium diaphragm, 3" voice coil, coaxial assembly)

¹ Sensitivity is the average SPL measured over the component's rated bandwidth

² Directivity is averaged over the 1-10 kHz range

³ Power rating displays the long term RMS power handling capacity using pink noise with a 6 dB crest factor over the component's rated bandwidth

⁴ System Output gives the unweighted SPL output of the system referenced to 1 m, including preset equalization and band leveling adjustment as measured under freefield conditions

Enclosure

| | | |
|-------------------|--|----------|
| • Height | 580 mm | 22.8 in |
| • Front Width | 440 mm | 17.3 in |
| • Rear Width | 167 mm | 6.6 in |
| • Depth | 474 mm | 18.7 in |
| • Trap Angle | 41 degrees with respect to vertical | |
| • Net Weight | 31.5 kg | 69.3 lbs |
| • Shipping Weight | 34.5 kg | 75.9 lbs |
| • Shipping Dims | 655 x 500 x 570 mm | |
| | 25.8 x 19.7 x 22.4 in | |
| • Connectors | 2x 4-pin Neutrik speakon | |
| • Material | 18 mm, 30 mm Baltic birch plywood | |
| • Finish | Maroon-gray™ | |
| • Grill | Black epoxy perforated steel with acoustically transparent foam | |
| • Rigging | Integrated flying hardware, handles and pole mount socket, Omnimount-ready | |

Additional Equipment

- L-ACOUSTICS LLC115b-st or LLC115b-2w analog controllers
- L-ACOUSTICS SB115, SB118, SB218 subwoofers
- L-ACOUSTICS LA 17a or LA 24a power amplifier

ARCHITECT SPECIFICATIONS

The enclosure shall be a switch-selectable active/pассив, two-way, coaxial full range loudspeaker containing one direct radiating, bass reflex-loaded 15 inch low frequency transducer and one 1.4 inch exit, 3 inch voice coil diameter, titanium alloy diaphragm compression driver. As a full range system, the frequency response shall be 65 Hz to 14 kHz with less than ± 3 dB variation and the usable bandwidth shall be 50 Hz to 16 kHz (-10 dB).

The cone body of the low frequency driver shall provide pattern control loading of the compression driver and yield an 85-degree conical dispersion pattern that is axi-symmetrical. The 2nd and 3rd order passive filters employed in the enclosure shall provide a 1.2 kHz crossover point between low and high frequency components. In passive mode, long term power handling shall be 265 Wrms at a nominal 8-ohm impedance. In active mode, the crossover point between low and high frequency components shall be 1.2 kHz with 24 dB per octave Linkwitz-Riley characteristics and long term power handling shall be 265 Wrms for the low section and 150 Wrms for the high section at a nominal 8-ohm impedance. Connection to the loudspeaker shall be made via two parallel 4-pin Neutrik Speakon connectors.

The enclosure shall have a truncated wedge shape with a curved front profile. Dimensions shall be 58 cm (22.8 in) high, 44 cm (17.3 in) wide at the front of the enclosure, 16.7 cm (6.6 in) wide at the rear of the enclosure and 47.4 cm (18.7 in) deep. When used on its rear side, the front baffle of the enclosure shall be oriented at a 41-degree angle with respect to vertical, allowing the enclosure to be used as a floor monitor. Enclosure weight shall be 31.5 kg (69.3 lbs). Cabinet construction shall consist of 18 mm (0.70 in) and 30 mm (1.18 in) Baltic birch plywood with internal steel bracing and joints that are sealed, screwed and rabbeted. The finish shall be maroon-gray high resilient paint. The front of the enclosure shall be protected by a black powder-coated, 1.5 mm (0.06 in) thick steel grill that is covered with 10 mm (0.39 in) thick acoustically transparent open cell foam.

The enclosure shall have a 36 mm (1.42 in) diameter pole mount socket mounted on the bottom side and a single stud anchor plate mounted on the rear side along with four threaded inserts for attachment of an optional Omnimount bracket. Four recessed attachment locations shall be provided (2 each on the top and bottom sides) for rigging the enclosure with an adjustable U-bracket accessory with angular adjustment in steps of 10 degrees.

When operated in passive mode, the enclosure shall be used with a stereo analog controller and when used in active mode, the enclosure shall be used with a mono two-way analog controller. Both analog controllers shall monitor power amplifier outputs and employ sense return processing to provide thermal protection and cone excursion limiting for the loudspeaker components. Both analog controllers shall provide band limiting and corrective component equalization with three settings that are designed for front-of-house, floor monitor or operation with subwoofers. The stereo analog controller shall perform signal summation of the two input signal channels and both controllers shall provide a line level output signal with selectable band limiting and equalization for use of the enclosure in conjunction with three different subwoofer types.

The loudspeaker system shall be the L-ACOUSTICS MTD115b.

For passive operation the analog loudspeaker controller shall be the L-ACOUSTICS LLC115b-st.

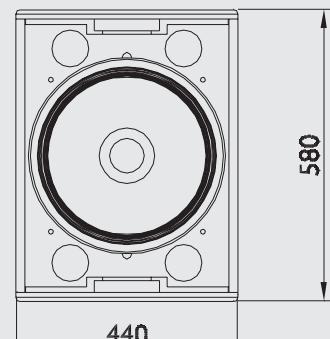
For active operation the analog loudspeaker controller shall be the L-ACOUSTICS LLC115b-2w.

The subwoofer system shall be the L-ACOUSTICS SB115, SB118 or SB218.

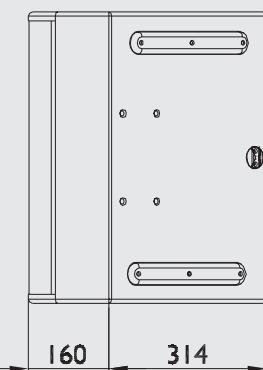
ACCESSORIES

ETR2: U-Bracket for ceiling, wall or scaffold mounting of the MTD115b with angular adjustment in steps of 10 degrees. A bracket mount plate is first attached to the 4 mount locations provided on the enclosure (2 each on the top and bottom sides). The U-bracket is then attached to the mount plate using two threaded knobs - one for attachment of the bracket, one for tilt of the enclosure.

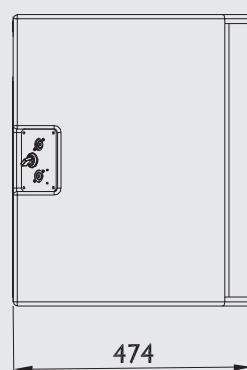
PIONI: Single stud Aeroquip flytrack fitting to ring.



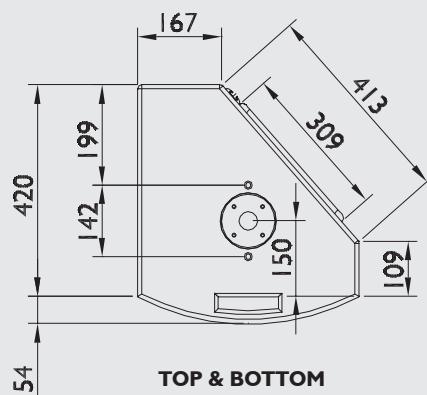
FRONT



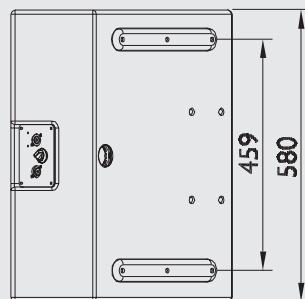
LEFT SIDE



RIGHT SIDE



TOP & BOTTOM



SCALE 1:15

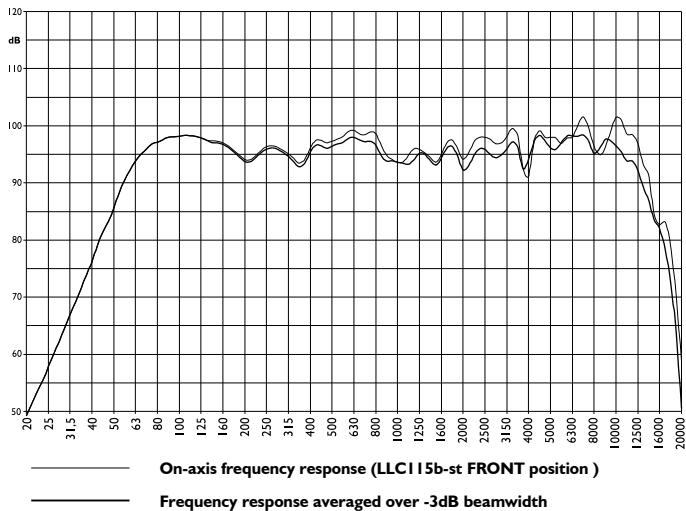
(Dimensions in mm)



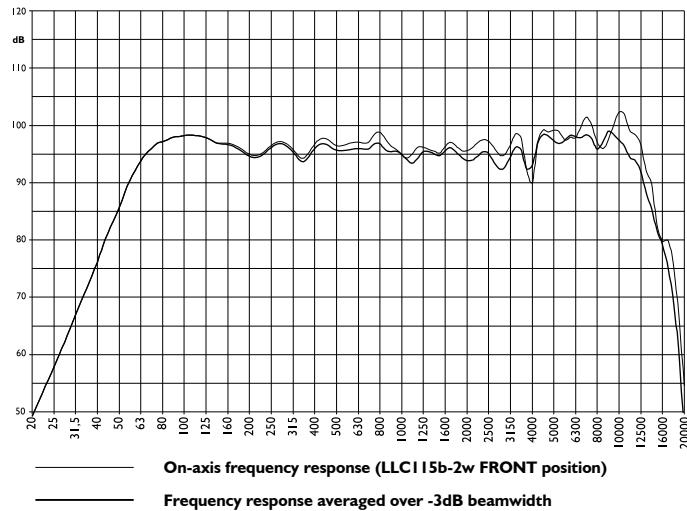
MTD115b

PERFORMANCE
DATA

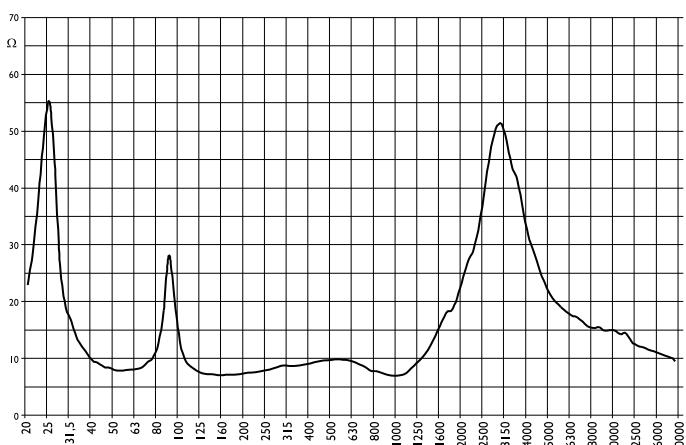
FREQUENCY RESPONSE (PASSIVE)



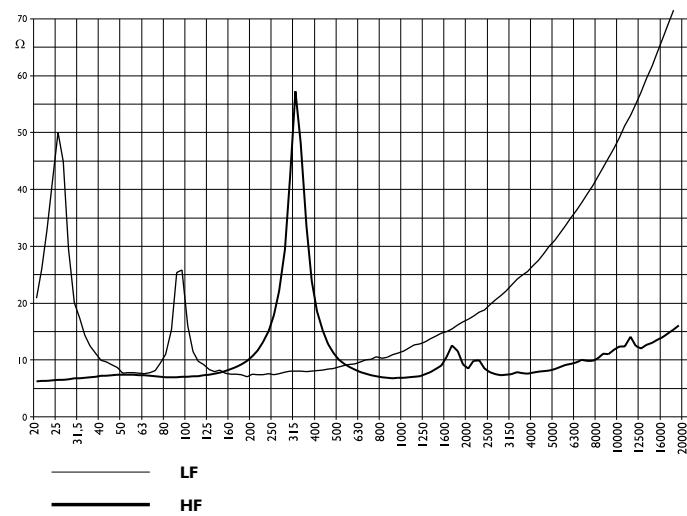
FREQUENCY RESPONSE (ACTIVE)



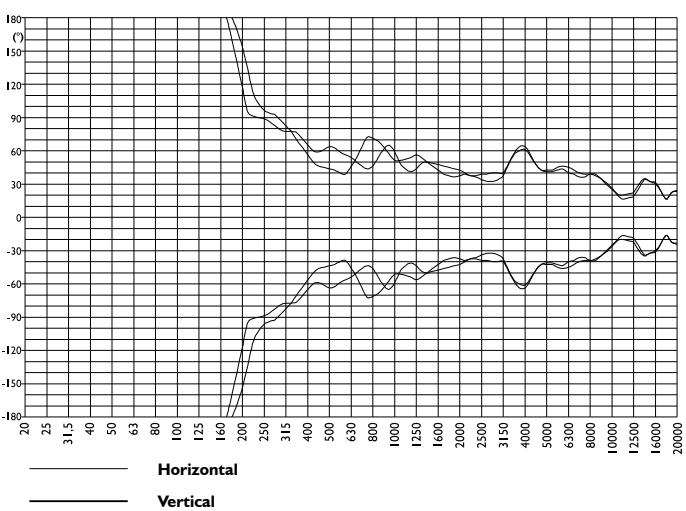
IMPEDANCE (PASSIVE)



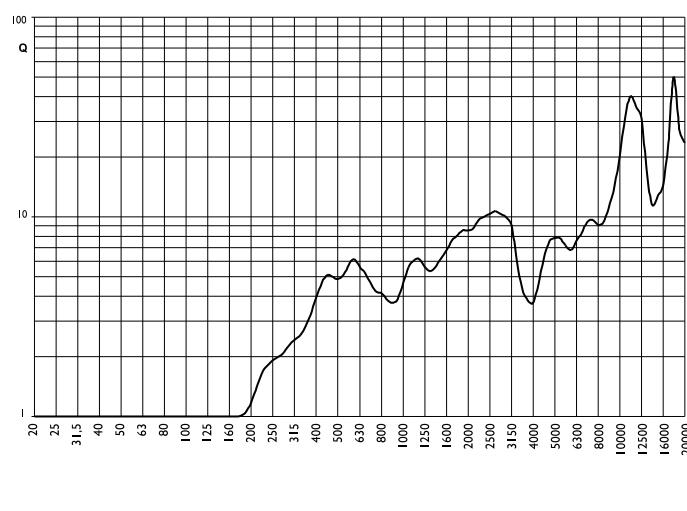
IMPEDANCE (ACTIVE)



BEAMWIDTH (-6dB)



DIRECTIVITY FACTOR Q





LLC115b-st

LLC115b-2w

ANALOG
CONTROLLERS

DESCRIPTION

The L-ACOUSTICS LLC115b-st or LLC115b-2w line level controllers are analog signal processing units that optimize the performance of the MTD115b loudspeaker when used in passive or active mode, respectively. For stereo operation of passive MTD115b enclosures, the LLC115b-st accepts two signal inputs and provides two processed outputs for the respective input channels plus a filtered, summed output for subwoofer drive. The LLC115b-2w is for mono operation of active MTD115b enclosures and accepts a single signal input while providing processed outputs for the subwoofer, low and high frequency channels. The main functions of the LLC115b-st and LLC115b-2w controllers are as follows:

- Bandpass filtering and equalization (3 modes, selectable)
- Crossover filtering for low and high channels (LLC115b-2w only)
- Mono summation for subwoofer drive (LLC115b-st only)
- Crossover filtering, equalization for subwoofer drive (3 models, switch selectable)
- Sense Return processing for thermal protection of speaker components and cone excursion limiting (voltage and frequency dependent)

Three different equalization/bandpass filtering modes tailor the frequency response of the MTD115b to suit different applications (selected via front panel switch). In MONITOR mode, high pass filtering is set at 45 Hz and a modest low frequency shelf is applied to provide an equalization contour suitable for floor monitor applications. In FRONT mode, a 45 Hz high pass filter is employed and increased low frequency shelving provides an equalization contour that is more suitable for FOH use. In X-OVER mode, a 100 Hz high pass filter is applied and there is no low frequency shelving equalization since the MTD115b is intended to be used with additional subwoofers.

For subwoofer drive, the second front panel switch allows for selection of bandpass filtering and equalization that is optimized for either SB115, SB118 or SB218 subwoofers. The processed subwoofer signal output is then available on the XLR connectors provided on the front or rear panels of the controller.

LLC115b-st

Two input signals (Ch A, B) are applied to the line input XLR connectors on the front panel of the controller. Rear panel XLR line outputs (Ch A, B) are connected to the power amplifier inputs with the amplifier outputs then connected to the controller "Sense Return" input Speakon connector (Ch A = 1+/1-, Ch B = 2+/2-). Since the amplifier is connected in a loop, LLC sense return protection circuitry can monitor the signal applied to the loudspeakers and provide thermal protection of speaker components plus voltage- and frequency-dependent cone excursion limiting provided that the power amplifier has a gain of 32 dB. The front panel of the LLC115b-st is then used as a patch panel with Ch A, B loudspeakers connected via the two 4-pin Speakon connectors provided.

LLC115b-2w

A single input signal is applied to the line input XLR on the front panel. Rear panel LF and HF XLR outputs are connected to power amplifier input channels with the amplifier outputs then connected to the controller "Sense Return" input speakon connector (LF = 1+/1-, HF = 2+/2-). As for the LLC115b-st, protection circuitry monitors the signal applied to the loudspeakers to provide thermal protection of speaker components plus voltage- and frequency- dependent cone excursion limiting provided that the power amplifier has a gain of 32 dB. The front panel of the LLC115b-2w is then used as a patch panel with loudspeaker connection via the 4-pin Speakon connector provided.

SPECIFICATIONS

Technical

| | |
|-------------------------------|--|
| Inputs | Electronically balanced 10 kΩ input (pin 2 hot) |
| Outputs | Electronically balanced 50 Ω output (pin 2 hot) |
| Input Headroom | +20 dBV |
| Nominal Gain at 200 Hz | 0 dB (unity gain) in X-OVER mode |
| Signal to Noise | Low-mid section > 84 dB High section > 92 dB |
| Dynamic Range | > 104 dB |
| THD | <0.01% (20 to 20k Hz @ 0 dBV) |
| Bandpass/Equalization Filters | FRONT: 45 Hz LR24 HPF + low frequency shelving eq MONITOR: 45 Hz LR24 HPF X-OVER: 100 Hz LR24 HPF |
| 3 modes | |
| Low-pass | 20 kHz |
| Subwoofer | 25, 26, 40 Hz LR24 HPF (for SB218, SB118, SB115) 100 Hz LR24 LPF |
| Crossover Filter | 1.2 kHz, 24 dB/octave slope (LLC115b-2w) |
| Speaker Protection | RMS limiter & peak limiter (LLC115b-st) LF Section: RMS limiter & peak limiter (LLC115b-2w) HF Section: RMS limiter (LLC115b-2w) |

Front & Rear Panel

| | |
|------------------------|--|
| Indicators | Signal: green LED for each channel Control: yellow LED for each channel |
| Front Panel Controls | MODE select (FRONT, MONITOR, X-OVER) SUB select (SB115, SB118, SB218) AC power switch |
| Rear Panel Control | SUB POLARITY (positive, negative) |
| Front Panel Connectors | Ch A, B XLR inputs with parallel loop through (LLC115b-st) Single XLR input with parallel loop through (LLC115b-2w) MÔNO SUB XLR output (in parallel with rear panel XLR) LOUDSPEAKERS OUT Ch A, B: 2x4-pin Neutrik speakon (LLC115b-st) Ch A=1+/1- & Ch B=1+/1- LOUDSPEAKER OUT : 1x4-pin Neutrik speakon (LLC115b-2w) LF=1+/1-, HF=2+/2- |
| Rear Panel Connectors | Ch A, B XLR line outputs (LLC115b-st) LF, HF XLR line outputs (LLC115b-2w) MONO SUB XLR output (in parallel with front panel XLR) Sense Return: 1x 4-pin Neutrik speakon Ch A=1+/1-, Ch B=2+/2- (LLC115b-st) LF=1+/1-, HF=2+/2- (LLC115b-2w) |
| Power Requirement | 100 V - 240 V 50/60 Hz |
| Power Consumption | 15 W |

Physical

| | |
|------------------------------|--|
| Finish | Black anodized front panel, white serigraphy |
| Net Dimensions | 483 x 44 x 305 mm 19 x 1.75 x 12.0 in |
| Net Weight | 3.75 kg 8.3 lbs |
| Shipping : Weight Dimensions | 4.8 kg 10.6 lbs 505 x 80 x 415 mm 19.9 x 3.1 x 16.3 in |

LLC115b-st



FRONT



REAR

LLC115b-2w



FRONT



REAR

Specifications subject to change without notice

Specs MTD115b 0103

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